

REMARKS¹

In the outstanding Office Action, the Examiner rejected claims 1, 3, 7-9, and 21-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0044118 to Zhou et al. (*Zhou*) in view of reference titled “Planar ER- and Yb-Doped Amplifiers and Lasers” to Hübner et al. (*Hübner*); rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in view of Hübner and in further view of U.S. Patent No. 6,088,492 to Kaneko et al. (*Kaneko*); rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Zhou in view of Hübner and in further view of the reference titled “Theory and Optimization of Lens Ducts” to Beach (*Beach*); rejected claims 6, 10, 12, and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhou in view Hübner and in further view of U.S. Patent No. 6,760,520 to Medin et al. (*Medin*); claims 11 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhou in view of Hübner and in further view of U.S. Patent Publication No. 2003/0185266 to Henrichs (*Henrichs*).

By this amendment, Applicant has amended claims 1 and 21. Claims 1, 3-13, and 21-25 remain pending in this application.

I. Applicant-Initiated Teleconferences

Applicant appreciates the courtesy extended to Applicant’s representative during the teleconferences of March 13, 2008, and April 1, 2008. In the teleconferences, Applicant’s representative noted that the previous Examiner had indicated that claims 24 and 25 included allowable subject matter. Applicant’s representative proposed to the Examiner to amend independent claims 1 and 21 to include the specific materials listed in claims 24.

¹ The Office Action contains statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

In response, the Examiner did not specifically indicate whether the proposed amendment would make claims 1 and 21 allowable, but noted that the previous Examiner's statement concerning the allowable subject matter in claims 24 and 25 remained valid. Thus, Applicant assumes that the present amendment to incorporate some of the allowable subject matter of claim 24 places claims 1 and 21 in condition for allowance.

II. Allowable Subject Matter

Applicant gratefully acknowledges the indication of allowable subject matter in claims 24 and 25. By this amendment, Applicant has amended claims 1 and 21 to include some of the allowable subject matter from claims 24 and 25. Accordingly, claims 1 and 21, and those claims which depend therefrom, are allowable over the applied prior art references.

III. Claim Rejections Under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 1, 3-13, and 21-25 under 35 U.S.C. § 103(a) on the ground that a *prima facie* case of obviousness has not been established. A *prima facie* case of obviousness has not been established because the Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the claimed invention and the prior art. Accordingly, the Office Action has failed to clearly articulate a reason why the prior art would have rendered the claimed invention obvious to one of ordinary skill in the art. *See* MPEP § 2141 (III), 8th Ed., Rev. 6 (Sept. 2007).

A. Claims 1, 3, 7-9, and 21-23

Initially, Applicant again notes that claims 1 and 21 have been amended to include some of the allowable subject matter of claims 24 and 25. Accordingly, claims 1 and 21 are allowable over *Zhou* and *Hübner*. That is, neither *Zhou* nor *Hübner* disclose or suggest a combination including "at least one amorphous film-based slab waveguide comprising a rare-earth doped

material comprising Al_2O_3 , Y_2O_3 , or TiO_2 ,” as recited in amended claims 1 and 21 (emphasis added).

Moreover, *Zhou* fails to disclose or suggest a combination including at least “at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3 , Y_2O_3 , or TiO_2 ,” as recited in amended claims 1 and 21. The Examiner acknowledges this deficiency of *Zhou* at page 5 of the Office Action.

To attempt to cure the deficiencies of *Zhou*, the Examiner cites to *Hübner*, stating “Hubner et al teach that rare-earth doped waveguide are well known in the art.” Office Action, page 5. Even if the Examiner’s statement could be considered as being correct, *Hübner* cannot cure the deficiencies of *Zhou* because the Examiner’s proposed modification of *Zhou* and *Hübner* would render *Zhou* unsuitable for its intended purpose.

Zhou extensively discloses forming a waveguide having a silicon core. *Zhou* further discloses that the Si core has a high refractive index of 3.5. *Zhou* further discloses performing specific processing steps on the Si core to obtain a waveguide having predetermined characteristics. See, e.g., *Zhou*, paragraph [0227]. Consequently, a person having ordinary skill in the art cannot merely change the properties of the core material through rare-earth doping and expect that the same waveguide having the same specifications will be formed using the methods disclosed in *Zhou*. Thus, the Examiner’s proposed modification renders *Zhou* unsuitable for its intended purpose.

Furthermore, *Hübner* teaches away from such a combination. *Hübner* discloses that silica-based glasses exhibit problems when doped with rare-earth materials. *Hübner*, pages 71-72. Applicant reminds the Examiner that “[i]t is improper to combine references where the references teach away from their combination.” MPEP § 2145, 8th Ed., Rev. 6 (September,

2007 (citing *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)).

Accordingly, there would be no motivation for combining *Hübner* with *Zhou* in the manner suggested by the Examiner.

For at least the foregoing, a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1 and 21 under 35 U.S.C. § 103(a).

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988). Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of dependent claims 3, 7-9, 22, and 23 under 35 U.S.C. § 103(a).

B. Claim 4

Claim 4 depends from claim 1, and thus requires all of the elements recited in claim 1. The deficiencies of *Zhou* and *Hübner* with respect to claim 1 are discussed above. Claim 1, and dependent claim 4, are not obvious when taken in combination with *Kaneko*.

The Examiner asserts that *Kaneko* discloses “a smooth optical waveguide that is coupled to a laser diode.” Office Action, page 6. These asserted teachings, even if found in *Kaneko*, do not render claim 1, and dependent claim 4, obvious in view of the above-noted deficiencies of *Zhou* and *Hübner*.

Moreover, *Kaneko* discloses an optical waveguide which includes a siloxane-containing polymer film. *See, Kaneko*, Abstract. *Kaneko* further discloses that the siloxane polymer is preferably applied to hybrid substrates which have refractive indexes similar to silica. *Kaneko*, col. 3, lines 39-50. *Kaneko*, however, provides no disclosure directed to “at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al₂O₃, Y₂O₃, or

TiO₂,” as recited in claim 1, and required by claim 4 (emphasis added). Accordingly, claim 1, and dependent claim 4, is not obvious in view of *Zhou* and *Hübner*, even when taken in combination with *Kaneko*. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 4 under 35 U.S.C. § 103(a).

C. Claim 5

Claim 5 depends from claim 1, and thus requires all of the elements recited in claim 1. The deficiencies of *Zhou* and *Hübner* with respect to claim 1 are discussed above. Claim 1, and dependent claim 5, are not obvious when taken in combination with *Beach*.

The Examiner asserts that *Beach* discloses “a waveguide device with a lens duct to couple light from a diode into a waveguide.” Office Action, page 7. These asserted teachings, even if found in *Beach*, do not render claim 1, and dependent claim 5, obvious in view of the above-noted deficiencies of *Zhou* and *Hübner*.

Moreover, *Beach* provides no disclosure directed to “at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al₂O₃, Y₂O₃, or TiO₂,” as recited in claim 1, and required by claim 5 (emphasis added). Accordingly, claim 1, and dependent claim 5, is not obvious in view of *Zhou* and *Hübner*, even when taken in combination with *Beach*. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 5 under 35 U.S.C. § 103(a).

D. Claims 6, 10, 12, and 14

Claims 6, 10, 12, and 14 depend from claim 1, and thus require all of the elements recited in claim 1. The deficiencies of *Zhou* and *Hübner* with respect to claim 1 are discussed above. Claim 1, and dependent claims 6, 10, 12, and 14, are not obvious when taken in combination with *Medin*.

The Examiner asserts that *Medin* discloses “a mode-size converter for a reverse tapered region.” Office Action, page 7. These asserted teachings, even if found in *Medin*, do not render claim 1, and dependent claims 6, 10, 12, and 14, obvious in view of the above-noted deficiencies of *Zhou* and *Hübner*.

Moreover, *Medin* discloses a mode size transformer which includes a waveguide and a planar substrate. *Medin*, col. 5, lines 34-36. *Medin* further discloses that the substrate may comprise glass, silica, or other similar glassy materials. *Medin*, col. 5, lines 59-61. *Medin*, however, provides no disclosure directed to “at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3 , Y_2O_3 , or TiO_2 ,” as recited in claim 1, and required by claims 6, 10, 12, and 14 (emphasis added). Accordingly, claim 1, and dependent claims 6, 10, 12, and 14, are not obvious in view of *Zhou* and *Hübner*, even when taken in combination with *Medin*. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 6, 10, 12, and 14 under 35 U.S.C. § 103(a).

E. Claims 11 and 13

Claims 11 and 13 depend from claim 1, and thus require all of the elements recited in claim 1. The deficiencies of *Zhou* and *Hübner* with respect to claim 1 are discussed above. Claim 1, and dependent claims 11 and 13, are not obvious when taken in combination with *Henrichs*.

The Examiner asserts that *Henrichs* discloses “a VCSEL and a diode are equivalent structures known in the art and that they are both used in optical pumping.” Office Action, page 8. These asserted teachings, even if found in *Henrichs*, do not render claim 1, and dependent claims 11 and 13, obvious in view of the above-noted deficiencies of *Henrichs*.

Moreover, *Henrichs* discloses a folded cavity solid state laser which includes a prism waveguide. *Henrichs*, paragraph [0052]. *Henrichs* further discloses that the prism waveguide is formed from an ion-doped solid-state, active medium material. *Henrichs*, paragraph [0148]. *Henrichs*, however, provides no disclosure directed to “at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3 , Y_2O_3 , or TiO_2 ,” as recited in claim 1, and required by claims 11 and 13 (emphasis added). Accordingly, claim 1, and dependent claims 11 and 13, are not obvious in view of *Zhou* and *Hübner*, even when taken in combination with *Henrichs*. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claims 11 and 13 under 35 U.S.C. § 103(a).

V. Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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